PATENT

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February 28, 2007 — Date

Phoebe E. Pogson

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	: 09/617,318	Confirmation No.	: 9061
Applicants	: David N. Roundhill, Michalakis Averkiou and Jeffry E. Powers		
Filed	: July 17, 2000	Attorney Docket No.:	500789.01 (29756/US)
Art Unit	: 3737	Customer No.	: 27, 076
Examiner	: Francis J. Jaworski		
Title	: SYSTEM AND METHOD FOR THREE DIMENSIONAL HARMONIC ULTRASOUND IMAGING		

REQUEST FOR INTERFERENCE WITH APPLICATION UNDER 37 CFR 41.202

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §41.202, applicant hereby requests an interference with a patent.

1. IDENTIFICATION OF THE APPLICATION WITH WHICH APPLICANT SEEKS AN INTERFERENCE

Pursuant to 37 C.F.R. § 41.202(a)(1), the application with which applicant seeks an interference is U.S. Application No. 10/920,661 assigned to Research Technologies, Inc.

2. IDENTIFICATION OF CLAIMS, PROPOSED COUNTS AND CLAIM CORRESPONDENCE TO THE COUNTS

Pursuant to 37 C.F.R. § 41.202(a)(2), applicant proposes the following counts.

Count 1

Claim 157 of Application Serial No. 09/617,318 as amended by the Supplemental Amendment filed concurrently herewith.

With respect to proposed Count 1, the following claims correspond to proposed Count 1:

claims 23-32 of the '661 Application; and

claims 135-144 of the '318 Application.

Count 2

Claim 33 of the '661 Application or claim 145 of Application Serial No. 09/617,318 as amended by the Supplemental Amendment filed concurrently herewith.

With respect to proposed Count 2, in addition to independent claim 33 of the '661 Application and independent claim 145 of the '318 Application, the following additional claims correspond to proposed Count 2:

claims 34-44 of the '661 Application; and

claims 146-156 of the '318 Application.

3. CLAIM CHART

Pursuant to 37 C.F.R. § 41.202(a)(3), applicant has provided a claim chart comparing at least one claim of each party corresponding to the count.

Claim chart for proposed count 1

CLAIM OF 10/920,661 APPLICATION	CLAIM OF 09/617,318 APPLICATION AS AMENDED	Claim Correspondence
23. An ultrasound tissue harmonic imaging method, comprising the steps of:	157. A method of imaging a biological sample, comprising the steps of:	

providing a biological tissue sample;		This limitation of claim 23 is provided in the preamble of claim 50. Anticipated
generating a transmit ultrasonic signal at a fundamental frequency;	generating an initial ultrasonic signal;	Obvious variation
transmitting the ultrasound signal into and along a propagation path in the sample, wherein the tissue distorts the transmit ultrasonic signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies to the fundamental frequency, and further wherein the sample also reflects and scatters the distorted ultrasonic signal including said harmonic components;	directing the ultrasonic signal into and along a propagation path in the sample, wherein the sample causes finite, non-linear amplitude distortion of the ultrasonic signal along the propagation path and thereby produces a distorted ultrasonic signal comprised of a first order component signal and higher order harmonic component signals at a first and higher order harmonic frequencies respectively, and further wherein the sample also reflects the distorted ultrasonic signal including the first order and the higher order harmonic components;	Obvious variation
receiving the harmonic components of the reflected or scattered distorted ultrasonic signal;	receiving the higher order harmonic components of the reflected distorted ultrasonic signal produced by the distortion of the initial ultrasonic signal	Obvious variation

	along the propagation path and caused by said sample;	
using a band pass filter to filter the received harmonic components to enhance the relative signal strength of one or more of the received harmonic components;		Obvious variation
producing an ultrasound image of the biological tissue sample from said one or more of the received harmonic components; and	forming an image principally from one of said received higher order harmonic components of the reflected distorted ultrasonic signal; and	Obvious variation
displaying the produced ultrasound image of the biological tissue sample.	displaying said formed image.	Obvious variation

Claim chart for proposed count 2

CLAIMS OF 10/920,661 APPLICATION	CLAIM OF 09/617,318 APPLICATION AS AMENDED	Claim Correspondence
33. A method for reducing speckle in an ultrasound tissue image, comprising the steps of:	145. A method for reducing speckle in an ultrasound tissue image, comprising the steps of:	Identical - anticipated
providing a biological tissue sample;	providing a biological tissue sample;	
generating a transmit ultrasonic signal at a fundamental frequency;	generating a transmit ultrasonic signal at a fundamental frequency;	

directing the transmit signal into and along a propagation path in the sample, wherein the tissue distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including a fundamental component at the fundamental frequency and harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said fundamental and harmonic components;	directing the transmit signal into and along a propagation path in the sample, wherein the tissue distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including a fundamental component at the fundamental frequency and harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said fundamental and harmonic components;
receiving the fundamental component and the harmonic components of the reflected distorted ultrasonic signal;	receiving the fundamental component and the harmonic components of the reflected distorted ultrasonic signal;
forming an ultrasound image of the biological tissue sample using two or more of the received components to reduce speckle in the image; and	forming an ultrasound image of the biological tissue sample using two or more of the received components to reduce speckle in the image; and
displaying the formed image.	displaying the formed image.

It is respectfully submitted that the claims of the ‘661 Application and the application filed concurrently herewith interfere within the meaning of 37 CFR § 41.203(a) because the proposed counts either anticipate or render obvious the claims of the ‘661 Application.

4. EXPLANATION OF WHY APPLICANT WILL PREVAIL ON PRIORITY

Pursuant to 37 C.F.R. § 41.202(a)(4), it is respectfully submitted that the Applicants will be the senior party if an interference is declared and, therefore, are entitled to a presumption that the Applicants have invented interfering subject matter due to their earlier constructive reduction-to-practice. The application filed concurrently herewith is a continuation of pending United States Patent Application No. 09/617,318, filed July 17, 2000, which is a divisional of U.S. Patent Application No. 09/247,343, filed February 8, 1999, now issued as U.S. Patent No. 6,283,919; which application is a divisional of U.S. Patent Application No. 08/943,546, filed October 3, 1997, now issued as U.S. Patent No. 5,879,303; which application is a continuation-in-part of U.S. Patent Application No. 08/723,483, filed September 27, 1996, now issued as U.S. Patent No. 5,833,613, and claims the benefit of U.S. Provisional Application No. 60/032,771, filed November 26, 1996[1]. Due to the benefit of these earlier filing dates, the effective filing date of the application filed concurrently herewith is at least as early as September 27, 1996 which is prior to the effective filing date of the '661 Application, November 8, 1996.

Moreover, the Applicant can prove an actual reduction-to-practice that is prior to any constructive reduction-to-practice of the '661 Application.

[1] A reissue of U.S. Patent No. 6,283,919 is pending for the purpose of correcting the omission of the proper priority claim to U.S. Application No. 08/723,483, now issued U.S. Patent No. 5,833,613.

5. CLAIM CHART SHOWING ADDED OR AMENDED CLAIMS

Pursuant to 37 C.F.R. § 41.202(a)(5), the chart below shows the written description for each claim in applicant's written description.

	COPIED CLAIM	WRITTEN DESCRIPTION
135	An ultrasound tissue harmonic imaging method, comprising the steps of:	Page 2, lines 33-35 through page 3, lines 1-9, Page 7, lines 15-26, and Figures 7 & 8.
	providing a biological tissue sample; generating a transmit ultrasonic signal at a fundamental frequency;	Page 5, lines 3-7.
	transmitting the ultrasound signal into and along a propagation path in the sample, wherein the tissue distorts the transmit ultrasonic signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies to the fundamental frequency, and further wherein the sample also reflects and scatters the distorted ultrasonic signal including said harmonic components;	Page 1, lines 33-35, page 2, lines 1-7. Page 26, lines 26-31.
	receiving the harmonic components of the reflected or scattered distorted ultrasonic signal;	Page 7, lines 2-5. Page 26, lines 26-31.
	using a band pass filter to filter the received harmonic components to enhance the relative signal strength of one or more of the received harmonic components;	Page 7, lines 15-26. Figure 7.
	producing an ultrasound image of the biological tissue sample from said one or more of the received harmonic components; and	Page 9, lines 22-33. Page 26, lines 26-31.
	displaying the produced ultrasound image of the biological tissue sample.	Page 9, lines 33-35, page 10, lines 1-3.

136	An ultrasound tissue harmonic imaging method according to claim 135, wherein the band pass filter is a high pass filter to filter the received harmonic components.	Page 2, lines 33-35 through page 3, lines 1-9, Page 7, lines 15-26, and Figures 7 & 8.
137	An ultrasound tissue harmonic imaging method according to claim 135, wherein the band pass filter is a notched filter centered at the second harmonic component so as to receive primarily the second harmonic component.	Page 2, lines 33-35 through page 3, lines 1-9, Page 7, lines 15-26, and Figures 7 & 8.
138	An ultrasound tissue harmonic imaging method according to claim 135, wherein said one of the received harmonic components is the second harmonic component.	Page 5, lines 30-33.
139	An ultrasound tissue harmonic imaging method according to claim 135, wherein the band pass filter selects the harmonic components and removes the fundamental component.	Page 7, lines 13-26. Figure 7.
140	An ultrasound tissue harmonic imaging system for imaging a biological tissue sample, comprising: means for generating a transmit ultrasonic signal at a fundamental frequency and transmitting the signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects or scatters the distorted ultrasonic signal including said harmonic components; means for receiving the harmonic components of the reflected distorted ultrasonic signal; a band pass filter for filtering the received harmonic components to enhance the relative strength of one or more of the received harmonic components;	Page 2, lines 33-35 through page 3, lines 1-9, Page 7, lines 15-26, and Figures 7 & 8. Page 5, lines 3-7. Page 1, lines 33-35, page 2, lines 1-7. Page 26, lines 26-31. Page 7, lines 2-5. Page 26, lines 26-31. Page 7, lines 15-26. Figure 7.

	means for producing an image of the biological tissue sample from said one or more of the received harmonic components; and means for displaying the produced image.	Page 9, lines 22-33. Page 26, lines 26-31. Page 9, lines 33-35, page 10, lines 1-3.
141	An ultrasound tissue harmonic imaging system according to claim 140, wherein the band pass filter is a high pass filter to filter the received harmonic component.	Page 2, lines 33-35 through page 3, lines 1-9, Page 7, lines 15-26, and Figures 7 & 8.
142	An ultrasound tissue harmonic imaging system according to claim 140, wherein the band pass filter is a notched filter centered at the second harmonic component so as to receive primarily the second harmonic component.	Page 2, lines 33-35 through page 3, lines 1-9, Page 7, lines 15-26, and Figures 7 & 8.
143	An ultrasound tissue harmonic imaging system according to claim 140, wherein said one of the received harmonic components is the second harmonic component.	Page 5, lines 30-33.
144	A system according to claim 140, wherein the band pass filter selects the harmonic components and removes the fundamental component.	Page 7, lines 13-26. Figure 7.
145	A method for reducing speckle in an ultrasound tissue image, comprising the steps of: providing a biological tissue sample; generating a transmit ultrasonic signal at a fundamental frequency; directing the transmit signal into and along a propagation path in the sample, wherein the tissue distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including a fundamental component at the fundamental frequency and harmonic components at second and higher order harmonic frequencies of the	Page 3, lines 16-24. Page 21, lines 8-35 through page 22, lines 1-9. Page 23, lines 29-35 through page 25, lines 1-9

	fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said fundamental and harmonic components; receiving the fundamental component and the harmonic components of the reflected distorted ultrasonic signal; forming an ultrasound image of the biological tissue sample using two or more of the received components to reduce speckle in the image; and displaying the formed image.	
146	A method for reducing speckle in an ultrasound tissue harmonic image according to claim 145, further comprising the step of filtering the received components to enhance the relative strength of one or more of the received components.	Page 23, lines 29-35 through page 25, lines 1-9
147	A method for reducing speckle in an ultrasound tissue harmonic image according to claim 145, wherein: the forming step includes the step of forming the image from the sum of the fundamental component and one or more of the harmonic components of the received distorted ultrasonic signal.	Page 23, lines 29-35 through page 25, lines 1-9
148	A method for reducing speckle in an ultrasound tissue harmonic image according to claim 147, wherein the speckle pattern of said one or more of the harmonic components of the received signal is out of phase with the speckle pattern of said fundamental component of the received signal.	Page 14, lines 27-35 through page 15, lines 1-7.
149	A method for reducing speckle in an ultrasound tissue harmonic image according to claim 148, wherein said one or more of the harmonic components is the second harmonic component of the received signal.	Page 23, lines 29-35 through page 25, lines 1-9
150	A method for reducing speckle in an ultrasound tissue harmonic image according to claim 149, wherein:	Figures 2 and 3.

	each of the second harmonic component of the received signal and the fundamental component of the received signal has a respective mainlobe; and the second harmonic component and the fundamental component of the received signal have a largely constant phase relationship in their mainlobes.	
151	A system for reducing speckle in an ultrasound tissue harmonic image of a biological tissue sample, comprising: means for generating a transmit ultrasonic signal at a fundamental frequency and for directing the transmit signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including fundamental component at a fundamental frequency and harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said fundamental and harmonic components; means for receiving the fundamental and harmonic components of the reflected distorted ultrasonic signal; means for forming an ultrasound image of the biological tissue sample using two or more of the received components to reduce speckle in the image; and means for displaying the formed image.	Page 3, lines 16-24. Page 21, lines 8-35 through page 22, lines 1-9. Page 23, lines 29-35 through page 25, lines 1-9
152	A system for reducing speckle in an ultrasound tissue harmonic image according to claim 151, further comprising means for filtering the received components to enhance the relative strength of one or more of the received components.	Page 23, lines 29-35 through page 25, lines 1-9

153	A system for reducing speckle in an ultrasound tissue harmonic image according to claim 151, wherein: the forming means includes means for forming the image from the sum of the fundamental component and one or more of the harmonic components of the received distorted ultrasonic signal.	Page 23, lines 29-35 through page 25, lines 1-9
154	A system for reducing speckle in an ultrasound tissue harmonic image according to claim 153, wherein the speckle pattern of said one or more of the harmonic components of the received signal is out of phase with the speckle pattern of said fundamental component of the received signal.	Page 14, lines 27-35 through page 15, lines 1-7.
155	A system for reducing speckle in an ultrasound tissue harmonic image according to claim 153, wherein said one or more of the harmonic components is the second harmonic component of the received signal.	Page 23, lines 29-35 through page 25, lines 1-9
156	A system for reducing speckle in a tissue harmonic image according to claim 155, wherein: each of the second harmonic component of the received signal and the fundamental component of the received signal has a respective mainlobe; and the second harmonic component and the fundamental component of the received signal have a largely constant phase relationship in their mainlobes.	Figures 2 and 3.

6. CHART SHOWING CONSTRUCTIVE REDUCTION TO PRACTICE WITHIN THE SCOPE OF THE INTERFERING SUBJECT MATTER

Pursuant to 37 C.F.R. § 41.202(a)(6), all of the claims of the above-referenced application are entitled to be accorded the benefit of an earlier filed continuation or divisional application. The chart below illustrates where each of the claims is supported by the disclosure

of the earliest application in the chain of applications, U.S. Patent Application No. 08/723,483, filed September 27, 1996, now issued as U.S. Patent No. 5,833,613. The disclosure of each of the other applications in this chain is identical to that of the application filed concurrently herewith and the claim chart of section 5 above, therefore, shows where each of the claims is supported by the disclosures of the remaining applications in the chain. The written description citations below are taken from the issued U.S. Patent No. 5,833,613.

	COPIED CLAIM	WRITTEN DESCRIPTION
135	An ultrasound tissue harmonic imaging method, comprising the steps of:	
	providing a biological tissue sample; generating a transmit ultrasonic signal at a fundamental frequency;	Col. 3, lines 46-53; Col. 5, lines 11-13.
	transmitting the ultrasound signal into and along a propagation path in the sample, wherein the tissue distorts the transmit ultrasonic signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies to the fundamental frequency, and further wherein the sample also reflects and scatters the distorted ultrasonic signal including said harmonic components;	Col. 5, lines 30-35.
	receiving the harmonic components of the reflected or scattered distorted ultrasonic signal;	Col. 6, lines 1-4.
	using a band pass filter to filter the received harmonic components to enhance the relative signal strength of one or more of the received harmonic components;	Col. 6, lines 12-45.
	producing an ultrasound image of the biological tissue sample from said one or more of the received harmonic components; and	Col. 6, lines 20-21. Col. 7, lines 19-36.
	displaying the produced ultrasound image of	Col. 7, lines 52-56.

	the biological tissue sample.	
136	An ultrasound tissue harmonic imaging method according to claim 135, wherein the band pass filter is a high pass filter to filter the received harmonic components.	Col. 6, lines 12-45.
137	An ultrasound tissue harmonic imaging method according to claim 135, wherein the band pass filter is a notched filter centered at the second harmonic component so as to receive primarily the second harmonic component.	Col. 6, lines 12-45.
138	An ultrasound tissue harmonic imaging method according to claim 135, wherein said one of the received harmonic components is the second harmonic component.	Col. 5, lines 30-35. Col. 6, lines 20-21. Col. 7, lines 19-36.
139	An ultrasound tissue harmonic imaging method according to claim 135, wherein the band pass filter selects the harmonic components and removes the fundamental component.	Col. 6, lines 12-45.
140	An ultrasound tissue harmonic imaging system for imaging a biological tissue sample, comprising:	
	means for generating a transmit ultrasonic signal at a fundamental frequency and transmitting the signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects or scatters the distorted ultrasonic signal including said harmonic components;	Col. 3, lines 46-53; Col. 5, lines 11-13. Col. 5, lines 30-35. Figure 4: 110,112.
	means for receiving the harmonic components of the reflected distorted ultrasonic signal;	Col. 6, lines 1-4. Figure 4: 110, 112.
	a band pass filter for filtering the received harmonic components to enhance the relative strength of one or more of the received harmonic components;	Col. 6, lines 12-45. Figure 4: 118.

	means for producing an image of the biological tissue sample from said one or more of the received harmonic components; and means for displaying the produced image.	Col. 6, lines 20-21. Col. 7, lines 19-36. Figure 4: 140. Col. 7, lines 52-56. Figure 4: 50.
141	An ultrasound tissue harmonic imaging system according to claim 140, wherein the band pass filter is a high pass filter to filter the received harmonic component.	Col. 6, lines 12-45.
142	An ultrasound tissue harmonic imaging system according to claim 140, wherein the band pass filter is a notched filter centered at the second harmonic component so as to receive primarily the second harmonic component.	Col. 6, lines 12-45.
143	An ultrasound tissue harmonic imaging system according to claim 140, wherein said one of the received harmonic components is the second harmonic component.	Col. 5, lines 30-35. Col. 6, lines 20-21. Col. 7, lines 19-36.
144	A system according to claim 140, wherein the band pass filter selects the harmonic components and removes the fundamental component.	Col. 6, lines 12-45.
145	A method for reducing speckle in an ultrasound tissue image, comprising the steps of: providing a biological tissue sample; generating a transmit ultrasonic signal at a fundamental frequency; directing the transmit signal into and along a propagation path in the sample, wherein the tissue distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including a fundamental component at the fundamental frequency and harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic	Col. 2, lines 66-67 through Col. 3, lines 1-13. Col. 5, lines 7-35.

	signal including said fundamental and harmonic components; receiving the fundamental component and the harmonic components of the reflected distorted ultrasonic signal; forming an ultrasound image of the biological tissue sample using two or more of the received components to reduce speckle in the image; and displaying the formed image.	
146	A method for reducing speckle in an ultrasound tissue harmonic image according to claim 145, further comprising the step of filtering the received components to enhance the relative strength of one or more of the received components.	Col. 2, lines 66-67 through Col. 3, lines 1-13. Col. 5, lines 7-35.
147	A method for reducing speckle in an ultrasound tissue harmonic image according to claim 145, wherein: the forming step includes the step of forming the image from the sum of the fundamental component and one or more of the harmonic components of the received distorted ultrasonic signal.	Col. 2, lines 66-67 through Col. 3, lines 1-13. Col. 5, lines 7-35.
149	A method for reducing speckle in an ultrasound tissue harmonic image according to claim 148, wherein said one or more of the harmonic components is the second harmonic component of the received signal.	Col. 2, lines 66-67 through Col. 3, lines 1-13. Col. 5, lines 7-35.
151	A system for reducing speckle in an ultrasound tissue harmonic image of a biological tissue sample, comprising: means for generating a transmit ultrasonic signal at a fundamental frequency and for directing the transmit signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including fundamental component at a fundamental	Col. 2, lines 66-67 through Col. 3, lines 1-13. Col. 5, lines 7-35.

	frequency and harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said fundamental and harmonic components; means for receiving the fundamental and harmonic components of the reflected distorted ultrasonic signal; means for forming an ultrasound image of the biological tissue sample using two or more of the received components to reduce speckle in the image; and means for displaying the formed image.	
152	A system for reducing speckle in an ultrasound tissue harmonic image according to claim 151, further comprising means for filtering the received components to enhance the relative strength of one or more of the received components.	Col. 2, lines 66-67 through Col. 3, lines 1-13. Col. 5, lines 7-35.
153	A system for reducing speckle in an ultrasound tissue harmonic image according to claim 151, wherein: the forming means includes means for forming the image from the sum of the fundamental component and one or more of the harmonic components of the received distorted ultrasonic signal.	Col. 2, lines 66-67 through Col. 3, lines 1-13. Col. 5, lines 7-35.
155	A system for reducing speckle in an ultrasound tissue harmonic image according to claim 153, wherein said one or more of the harmonic components is the second harmonic component of the received signal.	Col. 2, lines 66-67 through Col. 3, lines 1-13. Col. 5, lines 7-35.

REMARKS

The Applicants have presented claims for the same subject matter as the claims of U.S. Application No. 10/920,661. The time limitation imposed by 35 U.S.C. § 135(b)(2) took effect on November 29, 2000 and applies only to applications filed on or after that date. The '318 Application was filed on July 17, 2000 and the limitation of 35 U.S.C. § 135(b)(2) is, therefore, inapplicable.

Respectfully submitted,

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I hereby certify that on the date specified below, this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

February 28, 2007
Date

Phoebe E Pogson

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	: 09/617,318	Confirmation No.	: 9061
Applicants	: David N. Roundhill, Michalakis Averkiou and Jeffry E. Powers		
Filed	: July 17, 2000	Attorney Docket No.:	500789.01 (29756/US)
Art Unit	: 3737	Customer No.	: 27, 076
Examiner	: Francis J. Jaworski		
Title	: SYSTEM AND METHOD FOR THREE DIMENSIONAL HARMONIC ULTRASOUND IMAGING		

REQUEST FOR INTERFERENCE WITH PATENT UNDER 37 CFR 41.202

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §41.202, Applicant hereby requests an interference with a patent.

1. IDENTIFICATION OF THE PATENT WITH WHICH APPLICANT SEEKS AN INTERFERENCE

Pursuant to 37 C.F.R. § 41.202(a)(1), the patent with which Applicant seeks an interference is U.S. Patent No. 7,004,905, issued February 28, 2006, assigned to Research Technologies, Inc.

2. IDENTIFICATION OF CLAIMS, PROPOSED COUNTS AND CLAIM CORRESPONDENCE TO THE COUNTS

Pursuant to 37 C.F.R. § 41.202(a)(2), Applicant proposes the following counts.

Count 1

Claim 133 of Application Serial No. 09/617,318 as amended by the Supplemental Amendment filed concurrently herewith.

With respect to proposed Count 1, the following claims correspond to proposed Count 1:

claims 1-7 and 14-20 of the '905 patent; and

claims 108-114 and 121-126 of the '318 Application.

Count 2

Application Serial No. 09/617,318 as amended by the Supplemental Amendment filed concurrently herewith.

With respect to proposed Count 2, the following claims correspond to proposed Count 1:

claims 8-13 and 21-26 of the '905 patent; and

claims 115-120 and 127-132 of the '318 Application.

3. CLAIM CHART

Pursuant to 37 C.F.R. § 41.202(a)(3), Applicant has provided a claim chart comparing at least one claim of each party corresponding to the count.

Claim chart for proposed count 1

PATENT CLAIM	APPLICATION CLAIM	Claim Correspondence
1. A method of imaging a biological sample, comprising the steps of:	108. A method of imaging a biological sample, comprising the steps of:	Identical - anticipated

generating a transmit ultrasonic signal at a fundamental frequency;	generating a transmit ultrasonic signal at a fundamental frequency;
directing the transmit signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said harmonic components;	directing the transmit signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said harmonic components;
receiving the harmonic components of the reflected distorted ultrasonic signal;	receiving the harmonic components of the reflected distorted ultrasonic signal;
digitizing the received signal;	digitizing the received signal;
using a processor to process the digitized signal to produce an image principally from one of the received harmonic components of the reflected distorted ultrasonic signal; and	using a processor to process the digitized signal to produce an image principally from one of the received harmonic components of the reflected distorted ultrasonic signal; and
displaying said produced image.	displaying said produced image.

Claim chart for proposed count 2

PATENT CLAIM	APPLICATION CLAIM	Claim Correspondence
8. A method of imaging a biological sample, comprising the steps of:	115. A method of imaging a biological sample, comprising the steps of:	Identical - anticipated
generating first and second ultrasonic transmit pulse signals at a fundamental frequency; directing the first and second pulse signals into and along a propagation path in the sample, wherein the sample distorts the first and second pulse signals along the propagation path and thereby produces, respectively, first and second distorted ultrasonic signals including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the first and second distorted ultrasonic signals including said harmonic components therein;	generating first and second ultrasonic transmit pulse signals at a fundamental frequency; directing the first and second pulse signals into and along a propagation path in the sample, wherein the sample distorts the first and second pulse signals along the propagation path and thereby produces, respectively, first and second distorted ultrasonic signals including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the first and second distorted ultrasonic signals including said harmonic components therein;	
receiving the harmonic components of the reflected first and second distorted ultrasonic signals;	receiving the harmonic components of the reflected first and second distorted ultrasonic signals;	
digitizing the received first and second signals;	digitizing the received first and second signals;	

scaling the digital values obtained from the first signal; subtracting the scaled digital values obtained from the first signal from the second signal to produce a resultant signal;	scaling the digital values obtained from the first signal; subtracting the scaled digital values obtained from the first signal from the second signal to produce a resultant signal;
using a processor to process said resultant signal to produce an image principally from the received harmonic components of the reflected distorted ultrasonic signals; and	using a processor to process said resultant signal to produce an image principally from the received harmonic components of the reflected distorted ultrasonic signals; and
displaying said produced image.	displaying said produced image.

It is respectfully submitted that the claims of the '905 patent and the '318 Application interfere within the meaning of 37 CFR § 41.203(a) because they correspond exactly.

4. EXPLANATION OF WHY APPLICANT WILL PREVAIL ON PRIORITY

Pursuant to 37 C.F.R. § 41.202(a)(4), it is respectfully submitted that the Applicants will be the senior party if an interference is declared and, therefore, are entitled to a presumption that the Applicants have invented interfering subject matter due to their earlier constructive reduction-to-practice. The '318 Application is a divisional of U.S. Patent Application No. 09/247,343, filed February 8, 1999, now issued as U.S. Patent No. 6,283,919; which application is a divisional of U.S. Patent Application No. 08/943,546, filed October 3, 1997, now issued as U.S. Patent No. 5,879,303; which application is a continuation-in-part of U.S. Patent Application No. 08/723,483, filed September 27, 1996, now issued as U.S. Patent No. 5,833,613, and claims the benefit of U.S. Provisional Application No. 60/032,771, filed

November 26, 1996[1]. Due to the benefit of these earlier filing dates, the effective filing date of the '318 Application is at least as early as September 27, 1996, which is prior to the effective filing date of November 8, 1996, of the '905 patent.

Moreover, the Applicant can show an actual reduction-to-practice that is prior to any constructive reduction-to-practice of the '905 patent.

5. CLAIM CHART SHOWING ADDED OR AMENDED CLAIMS

Pursuant to 37 C.F.R. § 41.202(a)(5), the chart below shows the written description for each claim in Applicant's written description.

	COPIED CLAIM	WRITTEN DESCRIPTION
108	A method of imaging a biological sample, comprising the steps of:	See generally, Page 2, line 33 through page 3, line 9. Figure 8.
	generating a transmit ultrasonic signal at a fundamental frequency;	Page 3, lines 4-9. Page 5, lines 3-7.
	directing the transmit signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said harmonic components;	Page 1, lines 33-35, page 2, lines 1-7. Page 26, lines 26-31. Page 5, lines 3-7.
	receiving the harmonic components of the	Page 7, lines 2-5.

[1] A reissue of U.S. Patent No. 6,283,919 is pending for the purpose of correcting the omission of the proper priority claim to U.S. Application No. 08/723,483, now issued U.S. Patent No. 5,833,613.

	reflected distorted ultrasonic signal; digitizing the received signal; using a processor to process the digitized signal to produce an image principally from one of the received harmonic components of the reflected distorted ultrasonic signal; and displaying said produced image.	Page 26, lines 26-31. Page 7, lines 2-5. Page 26, lines 26-31. Page 7, lines 12-21 Page 9, lines 22-33. Page 26, lines 26-31. Page 9, lines 33-35, page 10, lines 1-3.
109	A method according to claim 108, wherein the sample has a near field and a focal plane, and wherein the amplitude of the second harmonic component of the distorted ultrasonic signal exhibits a relatively large gain in growth from low near field values to significant focal plane amplitudes.	Page 10, lines 4-23. Figure 5.
110	A method according to claim 109, wherein the sample has a source plane, and as the transmit signal propagates to the focal plane, the amplitude of said second harmonic component of the produced, distorted signal at half the distance between the source and focal planes is about twice the amplitude of said second harmonic component at the source plane.	Figure 5.
111	A method according to claim 110, further comprising the step of high pass filtering the received harmonic components of the reflected, distorted ultrasonic signal.	Page 7, lines 15-26. Page 14, lines 18-21. Figure 7.
112	A method according to claim 111, wherein the high pass filtering step occurs before the	Figure 1: 115, 118.

	digitizing step.	
113	A method according to claim 108, wherein said sample causes defocusing effects in said near field, and because of said relatively large gain in growth of the amplitude of the second harmonic component between the near field and the focal plane, only a fraction of said second harmonic component is defocused by said near field defocusing effects.	Page 10, lines 24-35 through page 12, lines 1-18. Figures 2 & 3.
114	A method according to claim 108, wherein: the generating step includes the step of using a phased array transducer-receiver unit to generate the transmit signal; and the directing step includes the steps of: i) using the transducer-receiver unit to focus the transmit signal on a focal point in the sample, and ii) using electrical circuitry in the transducer-receiver unit to move the focal point around the sample.	Page 10, lines 12-16. Page 17, lines 16-26. Figure 1: 110,116.
115	A method of imaging a biological sample, comprising the steps of: generating first and second ultrasonic transmit pulse signals at a fundamental frequency; directing the first and second pulse signals into and along a propagation path in the sample, wherein the sample distorts the first and second pulse signals along the propagation path and thereby produces, respectively, first and second distorted ultrasonic signals including harmonic	Page 14, lines 27-35 through page 15, lines 1-7.

	components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the first and second distorted ultrasonic signals including said harmonic components therein; receiving the harmonic components of the reflected first and second distorted ultrasonic signals; digitizing the received first and second signals; scaling the digital values obtained from the first signal; subtracting the scaled digital values obtained from the first signal from the second signal to produce a resultant signal; using a processor to process said resultant signal to produce an image principally from the received harmonic components of the reflected distorted ultrasonic signals; and displaying said produced image.	
116	A method according to claim 115, wherein the resultant signal is high pass filtered and transformed to a time domain to obtain an on-axis distortion imaging pulse.	Page 7, lines 15-26. Page 14, lines 18-21. Figure 7.
117	A method according to claim 115, wherein the sample has a near field and a focal plane, and wherein the amplitudes of the second harmonic components of the distorted	Figure 5.

	ultrasonic signals exhibit relatively large gains in growth from low near field values to significant focal plane amplitudes.	
118	A method according to claim 117, wherein the sample has a source plane, and as the transmit pulse signals propagate to the focal plane, the amplitudes of said second harmonic components of the produced, distorted signals at half the distance between the source and focal planes is about twice the amplitudes of said second harmonic components at the source plane.	Figure 5.
119	A method according to claim 117, wherein said sample causes defocusing effects in said near field, and because of said relatively large gains in growth of the amplitudes of the second harmonic components between the near field and the focal plane, only a fraction of said second harmonic components are defocused by said near field defocusing effects.	Figures 2 & 3.
120	A method according to claim 115, wherein: the generating step includes the step of using a phased array transducer-receiver unit to generate the transmit signals; and the directing step includes the steps of: i) using the transducer-receiver unit to focus the transmit signals on a focal point in the sample; and ii) using electrical circuitry in the transducer-receiver unit to move the focal point around the sample.	Page 10, lines 12-16. Page 17, lines 16-26. Figure 1: 110,116.
121	A system for imaging a biological sample, comprising:	See generally, Page 2, line 33 through page 3, line 9. Figure 8.

	means for generating a transmit ultrasonic signal at a fundamental frequency;	Figure 1: 120, 117 and 114. Page 5, lines 3-7.
	means for directing the transmit signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said harmonic components;	Figure 1: 110, 112. Page 1, lines 33-35, page 2, lines 1-7. Page 26, lines 26-31.
	means for receiving the harmonic components of the reflected distorted ultrasonic signal;	Figure 1: 110, 112. Page 7, lines 2-5. Page 26, lines 26-31.
	an analog-to-digital converter for digitizing the received signal;	Figure 1: 115. Page 7, lines 2-5.
	a processor to process the digitized signal to produce an image principally from one of the received harmonic components of the reflected distorted ultrasonic signal; and	Figure 1: 37, 120 and 140. Page 7, lines 12-21 Page 9, lines 22-33. Page 26, lines 26-31.
	means for displaying said formed image.	Figure 1: 50. Page 9, lines 33-35, page 10, lines 1-3.
122	A system according to claim 121, wherein the sample has a near field and a focal plane, and wherein the amplitude of the second harmonic component of the distorted	Page 10, lines 4-23. Figure 5.

	ultrasonic signal exhibits a relatively large gain in growth from low near field values to significant focal plane amplitudes.	
123	A system according to claim 122, wherein the sample has a source plane, and as the transmit signal propagates to the focal plane, the amplitude of said second harmonic component of the produced, distorted signal at half the distance between the source and focal planes is about twice the amplitude of said second harmonic component at the source plane.	Figure 5.
124	A system according to claim 123, wherein said sample causes defocusing effects in said near field, and because of said relatively large gain in growth of the amplitude of the second harmonic component between the near field and the focal plane, only a fraction of said second harmonic component is defocused by said near field defocusing effects.	Page 10, lines 24-35 through page 12, lines 1-18. Figures 2 & 3.
125	A system according to claim 121, wherein reflected distorted signal also includes frequency components of the fundamental frequency, and further comprising a high pass filter to remove from the received signal the component thereof at the fundamental frequency.	Page 7, lines 15-26. Page 14, lines 18-21. Figure 7.
126	A system according to claim 115, wherein: the generating means includes a phased array transducer-receiver unit to generate the transmit signal; and the transducer-receiver unit focuses the transmit signal on a focal point in the	Page 10, lines 12-16. Page 17, lines 16-26. Figure 1: 110,116.

	sample, and includes electrical circuitry to move the focal point around the sample.	
127	A system for imaging a biological sample, comprising: means for generating first and second ultrasonic transmit pulse signals at a fundamental frequency; means for directing the first and second pulse signals into and along a propagation path in the sample, wherein the sample distorts the first and second pulse signals along the propagation path and thereby produces, respectively, first and second distorted ultrasonic signals including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the first and second distorted ultrasonic signals including said harmonic components therein; means for receiving the harmonic components of the reflected first and second distorted ultrasonic signals; an analog-to-digital converter for digitizing the received first and second signals; processor means for scaling the digital values obtained from the first signal, subtracting the scaled digital values obtained from the first signal from the second signal to produce a resultant signal, and to process said resultant signal to produce an image principally from the received harmonic components of the reflected distorted ultrasonic signals; and	Page 14, lines 27-35 through page 15, lines 1-7.

	means for displaying said formed image.	
128	A system according to claim 127, wherein the processor means includes a high pass filter to filter the resultant signal, and the processor means transforms the resultant signal to a time domain to obtain an on-axis distortion imaging pulse.	Page 7, lines 15-26. Page 14, lines 18-21. Figure 7.
129	A system according to claim 127, wherein the sample has a near field and a focal plane, and wherein the amplitudes of the second harmonic components of the distorted ultrasonic signals exhibit relatively large gains in growth from low near field values to significant focal plane amplitudes.	Figure 5.
130	A system according to claim 129, wherein the sample has a source plane, and as the transmit pulse signals propagate to the focal plane, the amplitudes of said second harmonic components of the produced, distorted signals at half the distance between the source and focal planes is about twice the amplitudes of said second harmonic components at the source plane.	Figure 5.
131	A system according to claim 129, wherein said sample causes defocusing effects in said near field, and because of said relatively large gains in growth of the amplitudes of the second harmonic components between the near field and the focal plane, only a fraction of said second harmonic components are defocused by said near field defocusing effects.	Figures 2 & 3.
132	A system according to claim 127, wherein: the generating means includes a phased array	Page 10, lines 12-16. Page 17, lines 16-26.

	transducer-receiver unit to generate the transmit signals; and the transducer-receiver unit focuses the transmit signals on a focal point in the sample, and includes electrical circuitry to move the focal point around the sample.	Figure 1: 110,116.

6. CHART SHOWING CONSTRUCTIVE REDUCTION TO PRACTICE WITHIN THE SCOPE OF THE INTERFERING SUBJECT MATTER

Pursuant to 37 C.F.R. § 41.202(a)(6), all of the claims of the '318 Application are entitled to be accorded the benefit of an earlier filed continuation or divisional application. The chart below illustrates where each of the claims is supported by the disclosure of the earliest application in the chain of applications, U.S. Patent Application No. 08/723,483, filed September 27, 1996, now issued as U.S. Patent No. 5,833,613. The disclosure of each of the other applications in this chain is identical to that of the '318 Application and the claim chart of section 5 above, therefore, shows where each of the claims is supported by the disclosures of the remaining applications in the chain. The written description citations below are taken from the issued U.S. Patent No. 5,833,613.

	COPIED CLAIM	WRITTEN DESCRIPTION
108	A method of imaging a biological sample, comprising the steps of:	
	generating a transmit ultrasonic signal at a fundamental frequency;	Col. 3, lines 46-53; Col. 5, lines 11-13.
	directing the transmit signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher	Col. 3, lines 46-53; Col. 5, lines 11-13, 30-35.

	order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said harmonic components; receiving the harmonic components of the reflected distorted ultrasonic signal; digitizing the received signal; using a processor to process the digitized signal to produce an image principally from one of the received harmonic components of the reflected distorted ultrasonic signal; and displaying said produced image.	 Col. 6, lines 1-4. Col. 6, lines 1-9. Col. 6, lines 20-21. Col. 7, lines 19-36. Col. 7, lines 52-56.
109	A method according to claim 108, wherein the sample has a near field and a focal plane, and wherein the amplitude of the second harmonic component of the distorted ultrasonic signal exhibits a relatively large gain in growth from low near field values to significant focal plane amplitudes.	Col. 9, lines 56-67 through Col. 10, lines 1-20.
110	A method according to claim 109, wherein the sample has a source plane, and as the transmit signal propagates to the focal plane, the amplitude of said second harmonic component of the produced, distorted signal at half the distance between the source and focal planes is about twice the amplitude of said second harmonic component at the source plane.	Col. 9, lines 56-67 through Col. 10, lines 1-20.

111	A method according to claim 110, further comprising the step of high pass filtering the received harmonic components of the reflected, distorted ultrasonic signal.	Col. 6, lines 12-45.
114	A method according to claim 108, wherein: the generating step includes the step of using a phased array transducer-receiver unit to generate the transmit signal; and the directing step includes the steps of: i) using the transducer-receiver unit to focus the transmit signal on a focal point in the sample, and ii) using electrical circuitry in the transducer-receiver unit to move the focal point around the sample.	Col. 10, lines 3-20.
115	A method of imaging a biological sample, comprising the steps of: generating first and second ultrasonic transmit pulse signals at a fundamental frequency; directing the first and second pulse signals into and along a propagation path in the sample, wherein the sample distorts the first and second pulse signals along the propagation path and thereby produces, respectively, first and second distorted ultrasonic signals including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the first and second distorted ultrasonic signals including said harmonic components therein;	 Col. 3, lines 46-53; Col. 5, lines 11-13. Col. 3, lines 46-53; Col. 5, lines 11-13, 30-35. Figure 2: 24.

	receiving the harmonic components of the reflected first and second distorted ultrasonic signals; digitizing the received first and second signals; scaling the digital values obtained from the first signal; subtracting the scaled digital values obtained from the first signal from the second signal to produce a resultant signal; using a processor to process said resultant signal to produce an image principally from the received harmonic components of the reflected distorted ultrasonic signals; and displaying said produced image.	Col. 6, lines 1-4. Col. 6, lines 1-9. Col. 6, lines 20-21. Col. 7, lines 19-36. Col. 7, lines 52-56.
116	A method according to claim 115, wherein the resultant signal is high pass filtered and transformed to a time domain to obtain an on-axis distortion imaging pulse.	Col. 6, lines 12-45.
117	A method according to claim 115, wherein the sample has a near field and a focal plane, and wherein the amplitudes of the second harmonic components of the distorted ultrasonic signals exhibit relatively large gains in growth from low near field values to significant focal plane amplitudes.	Col. 9, lines 56-67 through Col. 10, lines 1-20.
118	A method according to claim 117, wherein the sample has a source plane, and as the transmit pulse signals propagate to the focal plane, the amplitudes of said second harmonic components of the produced,	Col. 9, lines 56-67 through Col. 10, lines 1-20.

	distorted signals at half the distance between the source and focal planes is about twice the amplitudes of said second harmonic components at the source plane.	
120	A method according to claim 115, wherein: the generating step includes the step of using a phased array transducer-receiver unit to generate the transmit signals; and the directing step includes the steps of: i) using the transducer-receiver unit to focus the transmit signals on a focal point in the sample; and ii) using electrical circuitry in the transducer-receiver unit to move the focal point around the sample.	Col. 10, lines 3-20.
121	A system for imaging a biological sample, comprising: means for generating a transmit ultrasonic signal at a fundamental frequency; means for directing the transmit signal into and along a propagation path in the sample, wherein the sample distorts the transmit signal along the propagation path and thereby produces a distorted ultrasonic signal including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the distorted ultrasonic signal including said harmonic components; means for receiving the harmonic	 Figure 2, item 14, 16. Figure 4, items 120, 117, 114. Col. 3, lines 46-53; Col. 5, lines 11-13. Figure 2, items 10 and 12. Col. 5, lines 30-35. Figure 2, items 10 and 12.

	components of the reflected distorted ultrasonic signal; an analog-to-digital converter for digitizing the received signal; a processor to process the digitized signal to produce an image principally from one of the received harmonic components of the reflected distorted ultrasonic signal; and means for displaying said formed image.	Col. 5, lines 30-35. Figure 4, item 115. Col. 6, lines 1-9. Figure 2, item 42. Figure 4, item 140. Col. 6, lines 20-21. Col. 7, lines 19-36. Figure 2, item 50. Figure 4, item 50. Col. 7, lines 52-56.
122	A system according to claim 121, wherein the sample has a near field and a focal plane, and wherein the amplitude of the second harmonic component of the distorted ultrasonic signal exhibits a relatively large gain in growth from low near field values to significant focal plane amplitudes.	Col. 9, lines 56-67 through Col. 10, lines 1-20.
123	A system according to claim 122, wherein the sample has a source plane, and as the transmit signal propagates to the focal plane, the amplitude of said second harmonic component of the produced, distorted signal at half the distance between the source and focal planes is about twice the amplitude of said second harmonic component at the source plane.	Col. 9, lines 56-67 through Col. 10, lines 1-20.
125	A system according to claim 121, wherein reflected distorted signal also includes frequency components of the fundamental frequency, and further comprising a high pass filter to remove from the received signal	Figure 4, item 118. Col. 6, lines 12-45.

	the component thereof at the fundamental frequency.	
126	A system according to claim 121, wherein: the generating means includes a phased array transducer-receiver unit to generate the transmit signal; and the transducer-receiver unit focuses the transmit signal on a focal point in the sample, and includes electrical circuitry to move the focal point around the sample.	Figure 4, item 110 and 112. Col. 10, lines 3-20.
127	A system for imaging a biological sample, comprising: means for generating first and second ultrasonic transmit pulse signals at a fundamental frequency; means for directing the first and second pulse signals into and along a propagation path in the sample, wherein the sample distorts the first and second pulse signals along the propagation path and thereby produces, respectively, first and second distorted ultrasonic signals including harmonic components at second and higher order harmonic frequencies of the fundamental frequency, and further wherein the sample also reflects the first and second distorted ultrasonic signals including said harmonic components therein; means for receiving the harmonic components of the reflected first and second distorted ultrasonic signals;	 Figure 2, item 14, 16. Figure 4, items 120, 117, 114. Col. 3, lines 46-53; Col. 5, lines 11-13. Figure 2: 10, 12 and 24. Col. 5, lines 30-35. Figure 2: 10 and 12. Col. 5, lines 30-35. Col. 6, lines 1-4.

	an analog-to-digital converter for digitizing the received first and second signals;	
	processor means for scaling the digital values obtained from the first signal, subtracting the scaled digital values obtained from the first signal from the second signal to produce a resultant signal, and to process said resultant signal to produce an image principally from the received harmonic components of the reflected distorted ultrasonic signals; and	Figure 2, item 42. Figure 4, item 140. Col. 6, lines 20-21. Col. 7, lines 19-36.
	means for displaying said formed image.	Figure 2: 50. Figure 4: 50. Col. 7, lines 52-56.
128	A system according to claim 127, wherein the processor means includes a high pass filter to filter the resultant signal, and the processor means transforms the resultant signal to a time domain to obtain an on-axis distortion imaging pulse.	Col. 6, lines 12-45.
129	A system according to claim 127, wherein the sample has a near field and a focal plane, and wherein the amplitudes of the second harmonic components of the distorted ultrasonic signals exhibit relatively large gains in growth from low near field values to significant focal plane amplitudes.	Col. 9, lines 56-67 through Col. 10, lines 1-20.
130	A system according to claim 129, wherein the sample has a source plane, and as the transmit pulse signals propagate to the focal plane, the amplitudes of said second harmonic components of the produced, distorted signals at half the distance between	Col. 9, lines 56-67 through Col. 10, lines 1-20.

	the source and focal planes is about twice the amplitudes of said second harmonic components at the source plane.	
132	A system according to claim 127, wherein: the generating means includes a phased array transducer-receiver unit to generate the transmit signals; and the transducer-receiver unit focuses the transmit signals on a focal point in the sample, and includes electrical circuitry to move the focal point around the sample.	Col. 10, lines 3-20.

REMARKS

The Applicants have presented claims for the same subject matter as the claims of U.S. Patent No. 7,004,905. The '905 patent issued on February 28, 2006. As such, this Request for Interference with Patent is within the time limitation imposed by 35 U.S.C. § 135(b)(1).

The time limitation imposed by 35 U.S.C. § 135(b)(2) took effect on November 29, 2000 and applies only to applications filed on or after that date. The '318 Application was filed on July 17, 2000 and the limitation of 35 U.S.C. § 135(b)(2) is, therefore, inapplicable.

Because the proposed counts correspond to claims that are already allowed, it is respectfully submitted that the '318 Application is in position for an interference to be declared.

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